### *STAR Computing at PDSF Operations & Management*

This describes the operations and management plan for the STAR computing resource allocation and usage at the PDSF facility at NERSC. It describes the roles and responsibilities of the various participating organizations including estimates of the level of effort necessary to carry out these activities. The organization chart below provides an overview of the responsible parties and their relationships. Descriptions following the chart give detailed descriptions of responsibilities for implementation, reporting and oversight. These descriptions are followed by a level of effort summary.

In brief, PDSF facilities are operated by NERSC. STAR collaborators carry out STAR computing activities at PDSF in a manner that is integrated with the overall STAR computing operations of the collaboration. STAR collaborators work closely with the PDSF and other NERSC staff to ensure that the appropriate quality of service is maintained.

STAR PDSF Org Chart
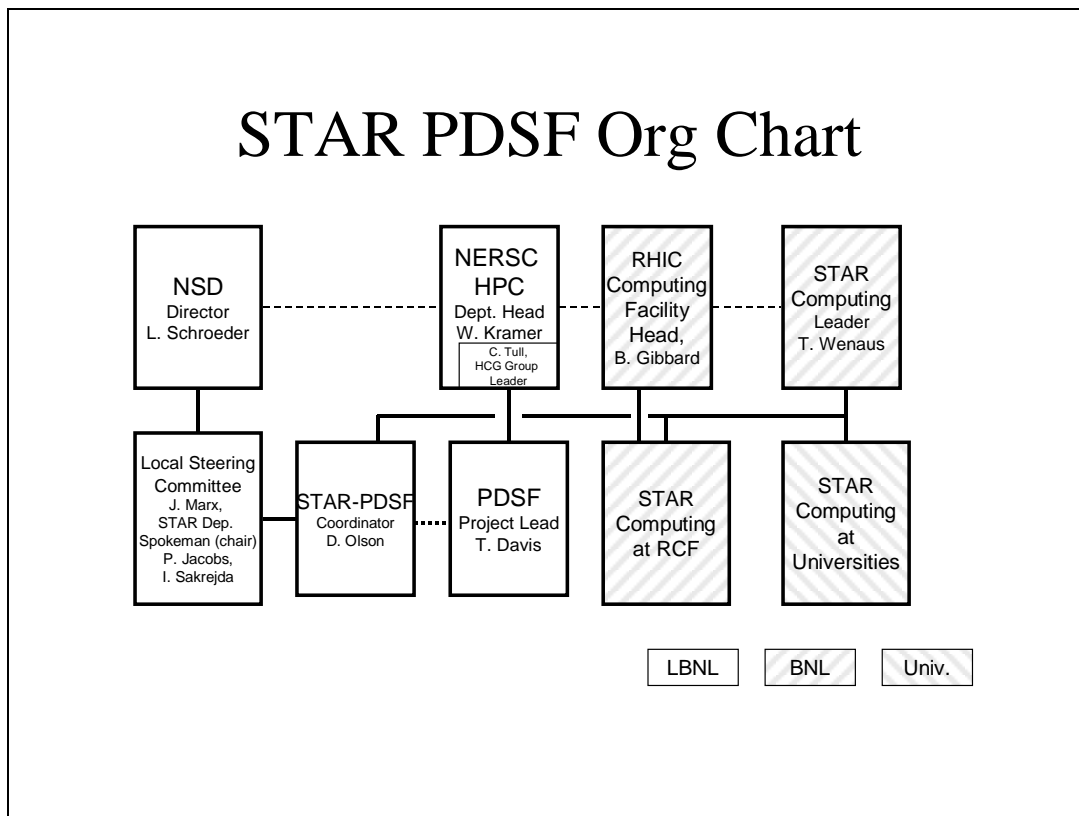
This chart shows the current organizational structure. NERSC reserves the right to adjust its internal organizational structure while maintaining the services described in this agreement.

Responsibilities

NSD, L. Schroeder, Director

Coordinates nuclear physics funding from DOE and authorizes expenditures at LBNL. Reports to DOE Nuclear Physics.

NERSC, W Kramer, Head of High Performance Computig Department and Deputy Divivision Director

Responsible for oversight and management of all NERSC production computing activities. Communicates important issues regarding PDSF operations for STAR to L. Schroeder and B. Gibbard. A detailed description of the NERSC provided services is given in a section below.

C. Tull, NERSC/HENP Computing Group Leader

C. Tull supervises personnel operating PDSF, authorizes acquisition and installation of hardware. Reports to W Kramer on all aspects of PDSF operations. Communicates operational or other issues that may affect STAR-PDSF operations to D. Olson.

PDSF, T. Davis, Project Lead

Responsible for overall system support, system design, hardware acquistion, and installation. Reports to Craig Tull on all aspects of PDSF operations. Conducts biweekly meetings to report and discuss PDSF issues with the STAR-PDSF coordinator and other PDSF users.

RHIC Computing Facility, B. Gibbard, Head

Oversees effectiveness of all computing facilities used for RHIC experiments. Reports to DOE. Communicates important issues regarding RHIC-related PDSF operations to W. Kramer and T. Wenaus.

STAR Computing, T. Wenaus, Head

Responsible for all aspects of computing operations necessary to carry out the physics goals of STAR. Oversees operations at BNL and ensures that appropriate interfaces and integration of STAR-PDSF with the overall STAR computing is possible and effective. Reports to J. Harris, STAR Spokesman. Communicates with B. Gibbard and D. Olson regarding important issues related to STAR computing at PDSF.

Responsible for any procedures deemed necessary by STAR in order to allocate computing resources amoung the various subgroups or individuals in STAR.

Local Steering Committee

The local steering committee is chaired by J. Marx, Deputy Spokesman for STAR and is comprised of STAR collaborators in the NSD at LBNL, as well as any other personnel deemed relevent, who are appointed by the chair. Responsibility is to provide oversight of the STAR-PDSF operations and effectiveness. Reports to L. Schroeder. Communicates important issues regarding STAR-PDSF operations to D. Olson.

STAR-PDSF, D. Olson, Coordinator

Responsible for implementation on PDSF of:
- STAR off-line computing environment,
- disk space management
- data transfer to/from RCF
- data management integration with STAR data catalog
- STAR-specific user support
- STAR subgroup resource usage or allocation enforcement mechanisms

Responsible for maintaining NERSC HPSS storage allocation for STAR via annual ERCAP process. Responsible for mechanism to enable any necessary STAR sub-group resource allocation requirements. Reports to T. Wenaus and Local Steering Committee about the resource allocations available to STAR (CPU cycles, disk space, HPSS storage) and the extent to which these resources are used by STAR. Communicates with T. Davis regarding configuration issues necessary for maintaining the STAR off-line computing environment on PDSF. Communicates with personnel at BNL (STAR and RCF) regarding mechanisms and performance needs for data transfer to/from PDSF and RCF.

Reporting Metrics

Once this organization is put in place an appropriate set of reporting metrics will be defined by a working group consisting of 1) the local steering committee, 2) T. Wenaus, 3) D. Olson and 4) T. Davis, 5) C. Tull. The use of these metrics will be approved by L. Schroeder, W. Kramer and B. Gibbard. These metrics will be used to judge the effectiveness of operations of STAR-PDSF.

Resource Allocations

The level of overall PDSF resources available to STAR will be negotiated by L. Schroeder and W. Kramer based upon funding. Resource allocation among groups and individuals within STAR will be carried out as part of the general STAR procedures for computing resources allocation at the RCF and elsewhere.

NERSC storage resouces in the HPSS system or CPU resources on the generally available NERSC systems that may be used in conjunction with PDSF are allocated via the annual ERCAP process. This is an open proposal process where allocations are awarded on an annual basis and the primary reason for an award is based upon scientific justification, technical appropriatness and readiness, and programtic justification [see ERCAP web site]. The STAR-PDSF coordinator is responsible to see that the necessary proposal is submitted annually.

NERSC Provided Services

The services provided by NERSC include:
- Computing hardware acquisition, installation, operation, AC power, HVAC, space.
- Network connectivity to Esnet and to the NERSC HPSS systems.
- OS software installation, patches.
- Non-experiment specific program development software such as compilers, debuggers, editors, profilers, etc.
- Application software installation.
- System security, support, and management.
- System backups.
- System Documentation
- General user support services including user account management, creation, deletion, web-based documentation and user interaction via email and telephone.
- Conducting PDSF user-group meetings.
- Participation by NERSC staff in meetings relevent to STAR/HENP computing issues, such as RCF quarterly meetings and HEPiX user group meetings.

STAR application support

The NERSC provided services will result in operations of the facility hardware consistent with STAR needs and NERSC policies. There are additional operational issues related to carrying out effective STAR application usage that go beyond the basic level of NERSC support. As these issues require in-depth knowledge of STAR-specific applications it is both necessary and appropriate that the personnel looking after these issues are part of the STAR collaboration rather than the NERSC staff. These issues are:
- Resource management within the overall STAR allocation.
  The resources are disk space on PDSF, CPU cycles in PDSF, storage units in the NERSC HPSS systems.
- STAR-specific software configuration and coordination with BNL.
  STAR-specific software includes root, root4star, geant, cernlib, and any software maintained under /afs/rhic/star.
  Configuration includes settting up the local STAR group filesystems, environment variables.

Coordination with BNL includes setting up a consistent software development and data analysis environment as at BNL and installing software updates from BNL in a timely fashion.

This include attending appropriate meetings with RCF and STAR personnel, some by phone and others in person at BNL, including the RCF Quarterly Meetings.

- STAR data transfer between NERSC and RCF.
  Some of the data produced by the detector at BNL as well as data generated at the RCF will be transferred to PDSF and the NERSC HPSS. Some of the data generated at NERSC and PDSF will be transferred to the RCF. This transfer will be carried out via the Esnet wide-area network.

- Database synchronization.
  Various databases are used by STAR for configuration, calibration, data management, etc. All of these databases that are necessary for off-line data analysis and simulations will be made accessible from PDSF with acceptable performance. This access will be either directly to database servers at BNL or by replicating the database to a local server at PDSF.

- STAR-specific user support.
  This includes preparing STAR-specific web pages as documentation of STAR-PDSF, analyzing and filtering problem reports so they are handled by the appropriate people, responding to problem reports and questions about application software at PDSF.

Level of effort summary

Currently the level of effort supporting PDSF is 2 FTE for system support (NERSC) and 1 FTE for user support (LBNL NSD & Physics), across all user groups. The table below summarizes the current support and the additional support required in order to carry out this plan. There are two FTE of new effort required to carry out this plan, one for basic system management/administration activities and one for STAR application and data handling activities. The timing of the additional system support FTE will be coordinated with the increases in hardware.

Role	# FTE	Staff
STAR-PDSF coordinator (D. Olson)	0.25	STAR
Lead system support (T. Davis)	1	NERSC
System support at beginning of FY00	1	NERSC
Additional system support with scale up*	1	NERSC
User support (funded by LBNL NSD&Physics)	1	NSD/Physics (in transition to NERSC user services)
Data handling (new)**	1	STAR
Additional STAR-specific application & user support	TBD	STAR
Total FTE	**5.25**	
Current, funded by NERSC	2	NERSC
Current, funded by LBNL NSD/Physics	1	NSD/Physics
Current	0.25	STAR
new for system support* (funded by Nuclear Physics)	1	NERSC
new for STAR application**	1	STAR

The level of NERSC-funded support is approximately $450K/year in FY00 (2 FTE + operations expenses) and this level is expected to continue.

Conditions

There are some conditions and assumptions that are necessary in order for this agreement to be valid. These derive from the basic assumption that this plan continues to receive the necessary support from DOE and value to the STAR collaboration.
1. The NERSC budget remains stable and does not decrease.
2. NERSC can provide this support within the agreed upon budget.
3. The technology used is something that is aligned/leveraged from other NERSC systems and activities
4. The metrics and QoS expectations (mentioned above)are consistent with NERSC systems and service architectures.
5. This agreement will be reviewed and adjusted every three years.
6. Continued approval and support from DOE/MICS and DOE/NP.
7. Systems and services conform to NERSC policies and practices.
8. NERSC reserves the right to organize support in the most effective manner possible.
9. NERSC systems and services remain viable and necessary for STAR computing activities.

This agreement will be reviewed and may be adjusted every three years.
When signed below by the approporiate representatives of NERSC, NSD and STAR this agreement is ackowledged to be in effect.

_____   _____
W. Kramer, NERSC HPC Dept. Head and Deputy Div. Director   Date

_____   _____
L. Schroeder, LBNL NSD Director.   Date

_____   _____
J. Harris, Spokesman for STAR   Date